REMARKS

Claims 1-5, 7-17 and 19-96 are pending, of which claims 1, 13, 25, 38, 60, 73, 80 and 87 are independent. In the Office Action, claims 1-5, 7-17 and 19-96 were rejected. In this Response, claims 1, 8, 11, 13, 20, 23, 24, 25, 38, 60, 73, and 52 are amended. Claims 2, 12, and 14 are canceled herein without prejudice or disclaimer. Claims 6 and 18 have been previously canceled. Applicant respectfully submits that the presently pending claims, as identified above, are now in a condition for allowance and respectfully requests that the Examiner reconsider the rejection of claims 1-5, 7-17 and 19-96 and pass those claims to allowance.

Applicant thanks the Examiner for the courtesy of the Interview of April 3, 2008.

I. Claim Amendments

Applicant amends independent claim 1 to recite "switching the first block to represent a second component model by selecting the second component model in the user interface without replacing the first block by a second block representing the second component model." Support for this amendment can be found in the Application at pages 4, first full paragraph, and page 8, paragraphs 2 and 3.

Applicant amends independent claim 13 to recite:

> switching the first block to represent a second component model by selecting the second component model in the user interface; and
> incorporating the second component model into the model of the target system,
> wherein incorporating the first component model and incorporating the second component model is accomplished by one of copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model.

Support for this amendment can be found in the Application at page 20, last paragraph through page 21, first paragraph, and at pages 21-23.

Applicant amends claims 8, 11, 20, 23, and 24 for clarity. The term "blocks" has been used consistently in place of the term "icons" in order to more clearly describe the subject

matter. Support for this amendment can be found throughout the Application. For instance, see the Application at page 9, third paragraph.

Applicant amends claims 25, 38, 60, 73 to correct a grammatical error. The word "the" has been added before the word "factors" in each claim.

Applicant amends claim 52 to correct a grammatical error. The word "system" replaces systems."

II. Claim Rejections under 35 U.S.C. §103

Claims 1-5, 7-17 and 19-96 were rejected under 35 U.S.C. §103(a) as being unpatentable over AeroSim Blockset User's Guide (hereafter "AeroSim") in view of FDC 1.2 – A Simulink Toolbox for Flight Dynamics and Control Analysis by Marc Rauw (hereafter "Rauw"). Applicant respectfully traverses the rejection.

A. Independent Claim 1

Applicant's amended independent claim 1 recites:

1. A computer-implemented method for modeling a target system, the method comprising:
     identifying a first block that represents multiple component models in a block diagram model of a target system;
     displaying a user interface in response to a user action, where the user action includes selecting the first block, the user interface including a mechanism that provides the user with the multiple component models;
     receiving a user selection that selects a first component model from the multiple component models;
     incorporating the first component model into the model of the target system using the first block;
     saving the model of the target system that includes the first component model in a memory; and
     switching the first block to represent a second component model by selecting the second component model in the user interface without replacing the first block with a second block representing the second component model.

Applicant respectfully submits that AeroSim and Rauw, alone or in combination, do not disclose or suggest at least *switching the first block to represent a second component model by selecting the second component model in the user interface without replacing the first block with a second block representing the second component model*, which is present in claim 1.

The Examiner asserts that the AeroSim manual discloses "switching the first block to represent a second component model by selecting the second component model in the user interface" at page 3, column 2, last paragraph, line 1-3, and "wherein the first component model is switched to the second component model without replacing the first block by a second block representing the second component model" at page 32, 4th paragraph. Applicant respectfully disagrees.

Page 3 of AeroSim discusses the sub-folders provided in the block library. The passage the Examiner relies on for this feature states "the **AeroSim** library folders, presented in Fig. 2, provide more than one-hundred blocks commonly used in the development of aircraft dynamic models." This passage does not discuss *switching the first block to represent a second component model by selecting the second component model in the user interface*. AeroSim does not discuss, in this passage, whether two component models could be "switched." AeroSim is silent as to this feature of claim 1.

Further, page 32 of AeroSim recites:

> Next we double-click the block to open the block parameters dialog. Here we will specify the aircraft parameter file, **myairplane.mat**, the initial conditions (position, velocity, attitude, angular rates, fuel, engine speed), the ground altitude with respect to the sea-level, and the simulation sample time.

AeroSim discusses a *blockset* for developing aircraft dynamic models, built using basic Simulink blocks and portable C/C++ code (AeroSim at page 2, §1.5 and page 1, §1). In addition to these basic aircraft dynamics blocks, AeroSim provides several complete aircraft models which can be customized through parameter files (AeroSim at page 1, §1).

Rauw provides additional tools on top of the basic Simulink environment. Rauw discusses the Flight Dynamics and Control toolbox for the design and analysis of aircraft dynamics and control systems, based on MATLAB and Simulink (Rauw at page iii, first paragraph). The toolbox is built around a general non-linear aircraft model which has been constructed in a modular way in order to provide flexibility to a user (Rauw at page 1, §1.1). The model can be accessed by means of the graphical user-interface of Simulink (Rauw at page 1, §1.1).

Applicant respectfully submits that AeroSim and Rauw do not disclose or suggest *switching the first block to represent a second component model by selecting the second component model in the user interface, wherein the first component model is switched to the second component model without replacing the first block with a second block representing the second component model.*

AeroSim discusses a library of blocks that can be incorporated into a block diagram model. The Examiner equates component models to the blocks of AeroSim (Office Action at page 31-32). However, a block is <u>not</u> the same as a component model. The present amendment clarifies this by referring separately to a "block" and a "component model."

There are not multiple component models in either AeroSim or Rauw. Neither AeroSim nor Rauw discusses *switching the first block to represent a second component model.* Neither AeroSim nor Rauw discusses *switching the first component model to the second component model without replacing the first block by a second block representing the second component model.* AeroSim and Rauw are both silent as to these features of claim 1.

Therefore, AeroSim and Rauw, alone or in combination, do not disclose or suggest *switching the first block to represent a second component model by selecting the second component model in the user interface, wherein the first component model is switched to the second component model without replacing the first block by a second block representing the second component model*, which is present in independent claim 1. Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw the 35 U.S.C. §103(a) rejection of claim 1.

B. Dependent Claims 3-5 and 7-11

Claims 3-5 and 7-12 depend from claim 1 and, as such, incorporate all of the features of claim 1. Claims 3-5 and 7-12 are therefore in condition for allowance for at least the same reasons presented above with respect to claim 1. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 3-5 and 7-12.

Further, dependent claim 3 recites features that are not present in the cited prior art. In particular, claim 3 recites *wherein the component models belong to a category of atmosphere models that include at least <u>a non standard day atmosphere model</u>*.

In the Office Action, the Examiner refers to the present application, page 13, second paragraph, lines 10-13 and interprets a non standard day atmosphere model as a model in which the geometrical altitude is replaced with the geopotential altitude (Office Action at page 3). Based on this interpretation, the Examiner alleges that the equations provided in page 25 of the FDC manual disclose a non standard day atmosphere model (Office Action at page 8).

However, as Applicant argued in the previous Response, the Examiner's characterization of the phrase "non standard day atmosphere model" is improper. A non standard day atmosphere model is *a model that implements specifications describing an atmosphere other than the standard atmosphere* (Application at page 13). The FDC manual does not disclose or suggest non standard day atmosphere model that represents specifications describing an atmosphere other than the standard atmosphere, such as an atmosphere including extremes. Replacing the geometrical altitude with the geopotential altitude in the equations described at page 25 of the FDC manual does not disclose or suggest a non standard day atmosphere model. Rather, the FDC manual specifically discloses that the equations provided in page 25 use the International Civil Aviation Organization (ICAO) Standard Atmosphere model (page 24). The FDC manual uses a standard atmosphere model and not a non standard atmosphere model.

Further, dependent claim 4 recites features that are not present in the cited prior art. In particular, claim 4 recites **_wherein the component models belong to a category of wind turbulence models that include at least <u>a discrete turbulence model</u>_**.

In the Office Action, the Examiner correctly defines "discrete" as "not continuous." Based on this definition, the Examiner alleges that AeroSim discloses discrete turbulence models at page 65 (Office Action at page 8). At page 65, AeroSim discloses a turbulence block that provides a von Karman turbulence model (Figure 47). AeroSim states "[t]he block is applying von Karman turbulence shaping filters for longitudinal, lateral and vertical components to 3 white-noise sources."

There is no indication in AeroSim that the von Karman turbulence model is a discrete turbulence model. AeroSim is silent as to this feature of claim 4. Likewise, Rauw does not discuss a discrete turbulence model.

Further, dependent claim 5 recites features that are not present in the cited prior art. In particular, claim 5 recites **_wherein the component models belong to a category of equations of motion models that include at least one simple variable mass model <u>and</u> at least one custom variable mass model_**. In the Office Action, the Examiner interprets "simple variable mass" and "custom variable mass" based on page 4 of the Application, which states "the variable mass includes at least one of simple variable mass in which mass changes via mass rate, and a custom variable mass in which users may specify how the mass changes." Based on this definition, the Examiner alleges that AeroSim discloses this feature of claim 5 at page 177, col. 2, ln. 1 (Office Action at page 9). The Examiner later states that it is Rauw that discloses this feature of claim 5, not AeroSim (Office Action at page 35). Applicant believes that the Examiner means "AeroSim" and not "Rauw," as Rauw discusses the entirely unrelated topic of trim condition at page 177.

AeroSim does not disclose **_wherein the component models belong to a category of equations of motion models that include at least one simple variable mass model <u>and</u> at least one custom variable mass model_**, which is present in claim 5. At page 177, AeroSim discloses a block for providing "time-varying inertia characteristics due to fuel consumption" (AeroSim at

page 177). The Examiner argues that Rauw (which Applicant takes to mean AeroSim) teaches both simple and custom variable mass, because "Rauw's model incorporates mass fuel flow out of and/or into the tank." This does not mean that AeroSim uses simple and custom variable mass. In simple variable mass, mass changes via mass rate, and in custom variable mass, a user specifies how the mass changes. This is unrelated to whether fuel flows out of or into the tank. The AeroSim manual is silent about the equations of motion (EOM) with simple variable mass or custom variable mass.

Further, AeroSim states that the block takes as an input the mass fuel flow out of the tank. This represents only mass model, while claim 5 recites *at least one simple variable mass model **and** at least one custom variable mass model*. There is no indication in AeroSim that both of these types of models are included in the category of equations of motion models that the component model belongs to. Likewise, Rauw does not discuss this feature of claim 5.

For at least the reasons presented above, Applicant respectfully requests that the Examiner reconsider and withdraw the 35 U.S.C. §103(a) rejections of claims 3-5 and 7-11.

Applicant cancels claims 2 and 12 herein without prejudice or disclaimer. Therefore, Applicant considers the 35 U.S.C. §103(a) rejection of claims 2 and 12 to be moot.

C. Independent Claim 13

Amended independent claim 13 recites:

13. A computer-implemented method for modeling a target system , the method comprising:
identifying a first block that represents multiple component models in a block diagram model of a target system;
displaying a user interface in response to a user action, where the user action includes selecting the first block, the user interface including a mechanism that provides the user with the multiple component models; and
receiving a user selection that selects a first component model from the multiple component models;
incorporating the first component model into the model of the target system using the block;

saving the model of the target system that includes the first component model in a memory;

switching the first block to represent a second component model by selecting the second component model in the user interface; and

incorporating the second component model into the model of the target system by one of copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model.

Applicant respectfully submits that AeroSim and Rauw do not disclose or suggest at least *switching the first block to represent a second component model by selecting the second component model in the user interface* and *incorporating the second component model into the model of the target system by one of copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model*, which are present in amended independent claim 13.

As discussed above, AeroSim does not discuss *switching the first block to represent a second component model by selecting the second component model in the user interface.* Because AeroSim does not switch blocks, there is no discussion in AeroSim of how to *incorporate a second component model into the model of the target system.* In conventional systems like AeroSim, a user must replace one block in the model with another block in order to implement new functionality. This adds time and complexity to the task of generating such models. Claim 13 provides three ways to incorporate a second component model into the model of the target system: *copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model.*

Likewise, Rauw provides a toolbox for modeling flight dynamics and control analysis in Simulink. Rauw also does not discuss *incorporating the second component model into the model of the target system by one of copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model.* Rauw is silent as to this feature of claim 13.

Therefore, AeroSim and Rauw, alone or in combination, do not disclose or suggest at least *switching the first block to represent a second component model by selecting the second component model in the user interface* and *wherein incorporating the first component model and incorporating the second component model is accomplished by one of copying or referring to the second component model in the block, conditionally evaluating at least a part of the component model, or executing a sequence of modifications to the component model*, as recited by amended independent claim 13. Applicants therefore respectfully request that the 35 U.S.C. §103(a) rejection of claim 13 be reconsidered and withdrawn.

D. Dependent Claims 15-17 and 19-24

Claims 15-17 and 19-24 depend on base claim 13 and, as such, incorporate all of the features of claim 13.

Further, Applicant submits that Rauw and AeroSim do not disclose or suggest the feature that "the component models belong to a category of atmosphere models that include at least a non standard day atmosphere model," as recited in claim 15. The same arguments that apply to claim 3 apply to claim 15.

Further, Applicant submits that Rauw and AeroSim do not disclose or suggest the feature that "the component models belong to a category of wind turbulence models that include at least a discrete turbulence model," as recited in claim 16. The same arguments that apply to claim 4 apply to claim 16.

Further, Applicant submits that Rauw and AeroSim do not disclose or suggest the feature that "the component models belong to a category of equations of motion models that include at least one simple variable mass model and at least one custom variable mass model," as recited in claim 17. The same arguments that apply to claim 5 apply to claim 17.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 15-17 and 19-24.

As Applicant has canceled claim 14 without prejudice or disclaimer, Applicant considers the rejection of claim 14 to be moot.

D. Independent Claim 25

Independent claim 25 recites:

25. A computer implemented system for designing a target system in which a planetary environment is one of the factors for designing the target system, the system comprising:
        a model storage for storing and providing models necessary to design the target system;
        a design unit for designing the target system by utilizing the models provided by the model storage; and
        a memory for saving a model of the target system,
        wherein the model storage includes at least one non-standard day atmosphere model.

Applicant respectfully submits that AeroSim and Rauw do not disclose or suggest at least *the model storage includes at least one non-standard day atmosphere model*, which is present in independent claim 25. As discussed above relative to claim 3, AeroSim and Rauw do not disclose or suggest a non standard atmosphere model. For at least the reasons presented above, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 25 under 35 U.S.C. §103(a).

E. Dependent Claims 26-37

Claims 26-37 depend on base claim 25 and as such, incorporate all of the features of claim 25. Claims 26-37 are not rendered obvious over the cited references. Applicant therefore requests reconsideration and withdrawal of the rejection of claims 26-37 under 35 U.S.C. §103(a).

F. Independent Claim 38

Independent claim 38 recites:

38. A computer implemented system for designing a target system in which a planetary environment is one of the factors for designing the target system, the system comprising:
    a model storage for storing and providing models necessary to design the target system;
    a design unit for designing the target system by utilizing the models provided by the model storage; and
    a memory for saving a model of the target system,
    wherein the model storage provides a plurality of wind turbulence models including at least a discrete wind turbulence model.

Applicant respectfully submits that AeroSim and Rauw fail to disclose or suggest at least *the model storage provides a plurality of wind turbulence models including at least a discrete wind turbulence model*, which is present in claim 38. As discussed above relative to claim 4, AeroSim and Rauw does not disclose or suggest a discrete wind turbulence model. For at least the reasons presented above, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 38 under 35 U.S.C. §103(a).

G. Dependent Claims 39-59

Claims 39-59 depend on base claim 38 and, as such, incorporate all of the features of claim 38. Claims 39-49 therefore are in condition for allowance for at least the same reasons presented above relative to claim 38. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 39-59.

H. Independent Claim 60

Independent claim 60 recites:

60. A computer implemented system for designing a target system in which an aerospace or aeronautic model is one of the elements for designing the target system, the system comprising:

a model storage for storing and providing models necessary to design the target system;

a design unit for designing a model of the target system by utilizing the models provided by the model storage; and

a memory for saving the model of the target system, ***wherein the model storage provides a plurality of models for equations of motion, wherein the plurality of models for equations of motion include at least one model for equations of motion with simple variable mass and at least one model for equations of motion with custom variable mass.***

Applicant respectfully submits that AeroSim and Rauw fail to disclose or suggest at least the ***model storage provides a plurality of models for equations of motion, wherein the plurality of models for equations of motion include at least one model for equations of motion with simple variable mass and at least one model for equations of motion with custom variable mass***, which is present in claim 60.

As discussed above relative to claim 5, AeroSim and Rauw does not disclose or suggest at least one model for equations of motion with simple variable mass and at least one model for equations of motion with custom variable mass. For at least the reasons presented above, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 60 under 35 U.S.C. §103(a).

I. Dependent Claims 61-72

Claims 61-72 depend on base claim 60 and, as such, incorporate all of the features of claim 60 and are in condition for allowance for at least the same reasons presented above relative

to claim 60. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 61-72.

J. Independent Claim 73

Independent claim 73 recites:

73. A computer-readable medium holding instructions executable in a computer for the design of a target system, wherein a planetary environment is one of the factors for designing the target system, the instructions comprising:
          instructions for providing atmosphere models necessary to design the target system; and
          instructions for incorporating the atmosphere models to the target system, ***the atmosphere models including non-standard day atmospheric models***.

Applicant respectfully submits that AeroSim and Rauw fail to disclose or suggest at least ***the atmosphere models including non-standard day models***, which is present in claim 73. As discussed above relative to claim 3, AeroSim and Rauw does not disclose or suggest non-standard day models. For at least the reasons presented above, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 60 under 35 U.S.C. §103(a).

K. Dependent Claims 74-79

Claims 74-79 depend on base claim 73 and, as such, incorporate all of the features of claim 73 and are in condition for allowance for at least the same reasons presented above relative to claim 73. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 74-79.

L. Independent Claim 80

Independent claim 80 recites:

80. A computer-readable medium holding instructions executable in a computer for the design of a target system, wherein a planetary environment is one of factors for designing the target system, the instructions comprising:

instructions for providing wind turbulence models necessary to design the target system *wherein the wind turbulence model includes at least one discrete wind turbulence model*; and
instructions for incorporating the wind turbulence models to the target system

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest the *wind turbulence model includes at least one discrete wind turbulence model*, which is present in claim 80 As discussed above relative to claim 4, AeroSim and Rauw does not disclose or suggest at least one discrete wind turbulence model.   For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 80 under 35 U.S.C. §103(a).

M. Dependent Claims 81-86

Claims and 81-86 depend on base claim 80 and, as such, incorporate all of the features of claim 80 and are in condition for allowance for at least the same reasons presented above relative to claim 80. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 81-86.

N. Independent Claim 87

Independent claim 87 recites:

A computer-readable medium holding instructions executable in a computer for the design of a target system, the instructions for comprising:
instructions for providing equations of motion models necessary to design the target system *wherein the equations of motion models include at least one of simple variable mass models and custom variable mass models*; and
instructions for incorporating the equations of motion models into the target system

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest at least *the equations of motion models include at least one of simple variable mass models and custom variable mass models*, which is present in claim 87. As discussed above relative to claim 5, AeroSim and Rauw does not disclose or suggest at least one of simple variable mass models and

custom variable mass models. For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 87 under 35 U.S.C. §103(a).

O. Dependent Claims 88-96

Claims 88-96 depend on base claim 87 and, as such, incorporate all of the features of claim 87, and are in condition for allowance for at least the same reasons presented above relative to claim 87. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 88-96.

CONCLUSION

In view of the above comments, Applicant believes that the pending application is in condition for allowance and urges the Examiner to pass the claims to allowance. Should the Examiner feel that a teleconference would expedite the prosecution of this Application, the Examiner is urged to contact the Applicant's attorney at (617) 227-7400.

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. MWS-031. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

Dated: April 17, 2008   Respectfully submitted,

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